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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,199	12/16/2003	William G. Thorburn	MCE04-18	8790
47654	7590	07/07/2006	EXAMINER	
DAVID E. HUANG, ESQ. BAINWOOD HUANG & ASSOCIATES LLC 2 CONNECTOR ROAD SUITE 2A WESTBOROUGH, MA 01581			LUU, THANH X	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/737,199	<b>Applicant(s)</b> THORBURN, WILLIAM G.	
	<b>Examiner</b> Thanh X. Luu	<b>Art Unit</b> 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 and 8-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8, 11-20 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-6, 9, 10, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

This Office Action is in response to amendments and remarks filed May 25, 2006. Claims 1-6 and 8-23 are currently pending.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-6, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Bard (U.S. Patent 4,686,361).

Regarding claims 1, 2, 4-6, 9 and 10, Bard discloses (see Fig. 1) a measurement apparatus for determining the angular position of a first member (8) with respect to an elongated (shaft) second member (1) about a rotation axis (up and down) extending in the direction of elongation of the second member, comprising: an optical sensor head on the first member, the sensor head comprising a source (LED 5) of a light beam and a plurality of light detecting elements (6, 7); an offset beam generation element (4) on the second member, the offset beam generation element being operative to receive the light beam from the source and to return an offset light beam to the sensor head, the offset light beam propagating at a predetermined non-zero offset angle with respect to the rotation axis between the first and the second members to provide a light spot that travels in a generally elliptical path (around) over the light detecting elements as relative rotation about the rotation axis occurs between the first and second members; and a

signal processor (see Fig. 2) operative to process electrical signals produced by the detecting elements to determine the position of the offset beam of light along the elliptical path. Since the light detecting elements can be traced in a generally elliptical path, as understood, the detecting elements form at least one annuli (represents a ring) surrounding the light source.

3. Claims 1, 2, 4-6, 9, 10, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ebina et al. (U.S. Patent 5,943,233).

Regarding claims 1, 2, 4-6, 9, 10, 21 and 22, Ebina et al. disclose (see Fig. 18) a measurement apparatus for determining the angular position of a first member (housing 540; see Fig. 19) with respect to an elongated (shaft) second member (550) about a rotation axis extending in the direction of elongation of the second member, comprising: an optical sensor head on the first member, the sensor head comprising a source (LED 530) of a light beam and a plurality of light detecting elements (531, 532); an offset beam generation element (545) on the second member, the offset beam generation element being operative to receive the light beam from the source and to return an offset light beam to the sensor head, the offset light beam propagating at a predetermined non-zero offset angle with respect to the rotation axis between providing a light spot that travels in a generally elliptical path (around; see Fig. 7) over the light detecting elements as relative rotation occurs between the first and second members; and a signal processor (see Fig. 20) operative to process electrical signals produced by the detecting elements to determine the position of the offset beam of light along the elliptical path. Since the light detecting elements can be traced in a generally elliptical

path, as understood, the detecting elements form at least one annuli (represents a ring) surrounding the light source. Ebina et al. also disclose (see Fig. 18) an aperture (at 554 or 546 or 547) or a lens (see Fig. 46) between the sensor head and the offset beam generation element, to reduce the size of the light spot on the light detecting elements as claimed.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bard.

Regarding claim 3, Bard discloses the claimed invention as set forth above. Bard further teaches using a light source that is an LED or equivalent. Bard does not specifically disclose a VCSEL as claimed. However, VCSELs and LEDs are well known to be equivalent. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a VCSEL in the apparatus of Bard to obtain a more efficient light source.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ebina et al.

Regarding claim 3, Ebina et al. disclose the claimed invention as set forth above. Ebina et al. do not specifically disclose a VCSEL as claimed. However, VCSELs and LEDs are well known to be equivalent. It would have been obvious to a person of

Art Unit: 2878

ordinary skill in the art at the time the invention was made to provide a VCSEL in the apparatus of Ebina et al. to obtain a more efficient light source.

### ***Response to Arguments***

7. Applicant's arguments filed May 25, 2006 have been fully considered but they are not persuasive.

Applicant asserts that the prior art does not disclose rotation of a second member about its own axis of elongation. Examiner disagrees. First, such language is not explicitly present in the claims. The claims simply state that the rotation axis extends in a direction of elongation of the second member. As understood, the language that Applicant asserts is different in scope from the language in the claims. Regardless, at least in its initial position, the rotation axis (always straight up and down) of the prior art extends in a direction of elongation (joystick shaft) of the second member. Examiner further notes that although the element of the prior art pivots, the rotation axis remains straight up and down. Thus, as set forth above, this rejection is proper.

### ***Allowable Subject Matter***

8. Claims 8, 11-20 and 23 are allowed over the prior art of record.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

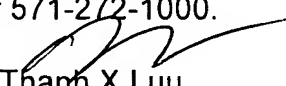
Art Unit: 2878

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is 571-272-2441. The examiner can normally be reached on M-F 6:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thanh X Luu  
Primary Examiner  
Art Unit 2878

06/2006